$$y = \frac{2x^2 + x - 5}{x}$$

V.A. $\rightarrow$ y-axis

H.A. $\rightarrow$ none

zeros $\rightarrow 2x^2 + x - 5 = 0$

$a = 2$

$b = 1$

$c = -5$

$$x = \frac{-1 \pm \sqrt{1 - 4 \cdot 2 \cdot (-5)}}{4}$$

$$x = \frac{-1 \pm \sqrt{41}}{4}$$

$x \approx 1.35$ or $x \approx -1.85$

$$y = \frac{2x^2 + x - 5}{x}$$

Slant Asymptote

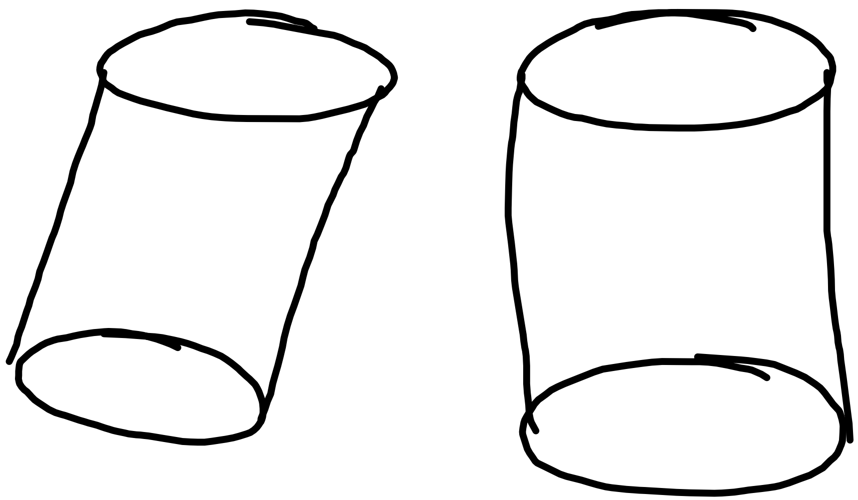
$$\rightarrow y = \frac{2x^2}{x} + \frac{x}{x} - \frac{5}{x}$$

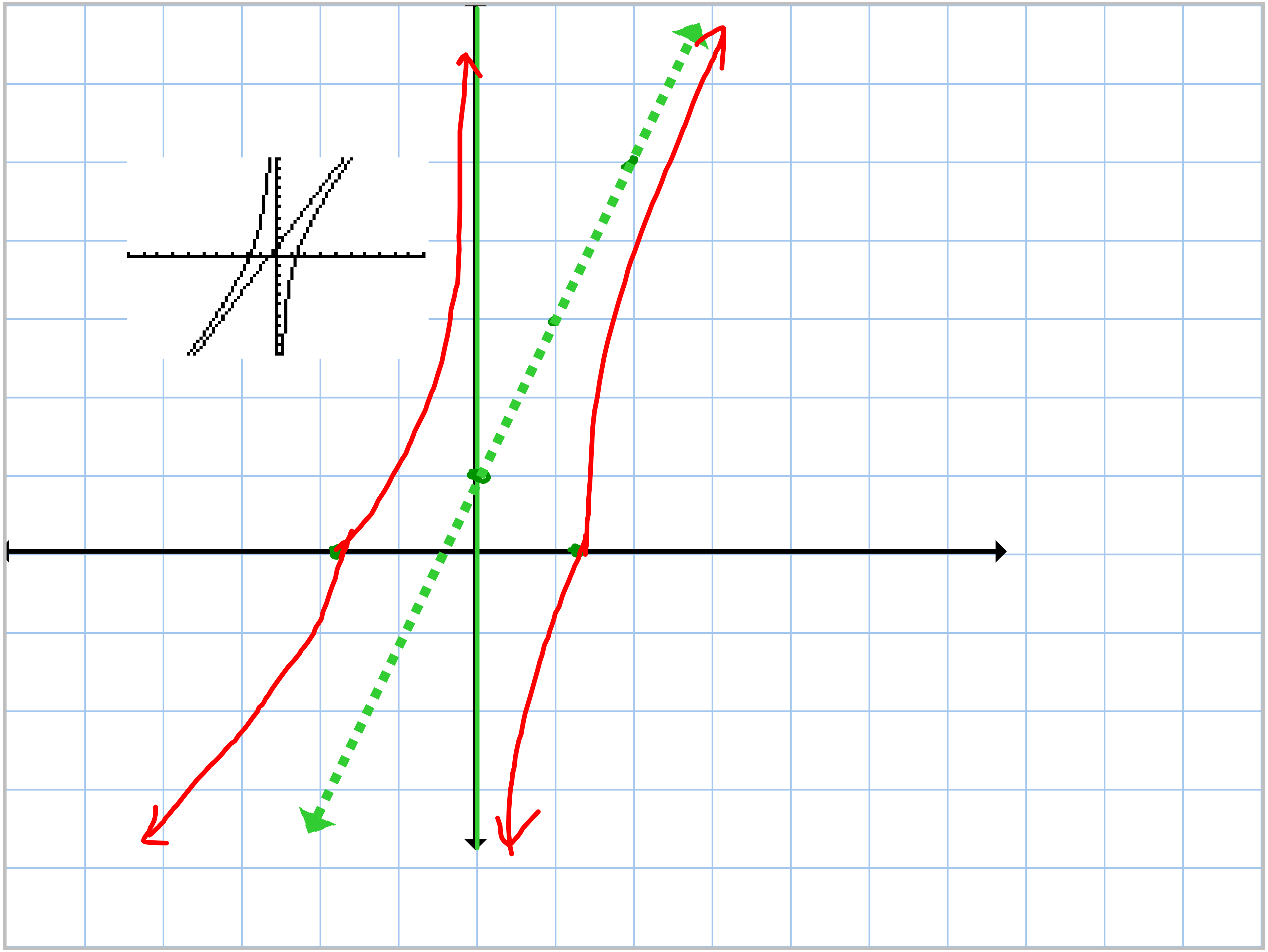
$y = 2x + 1$

$$y = \boxed{2x + 1} - \frac{5}{x}$$

Oblique Asymptote →

Slant asymptote





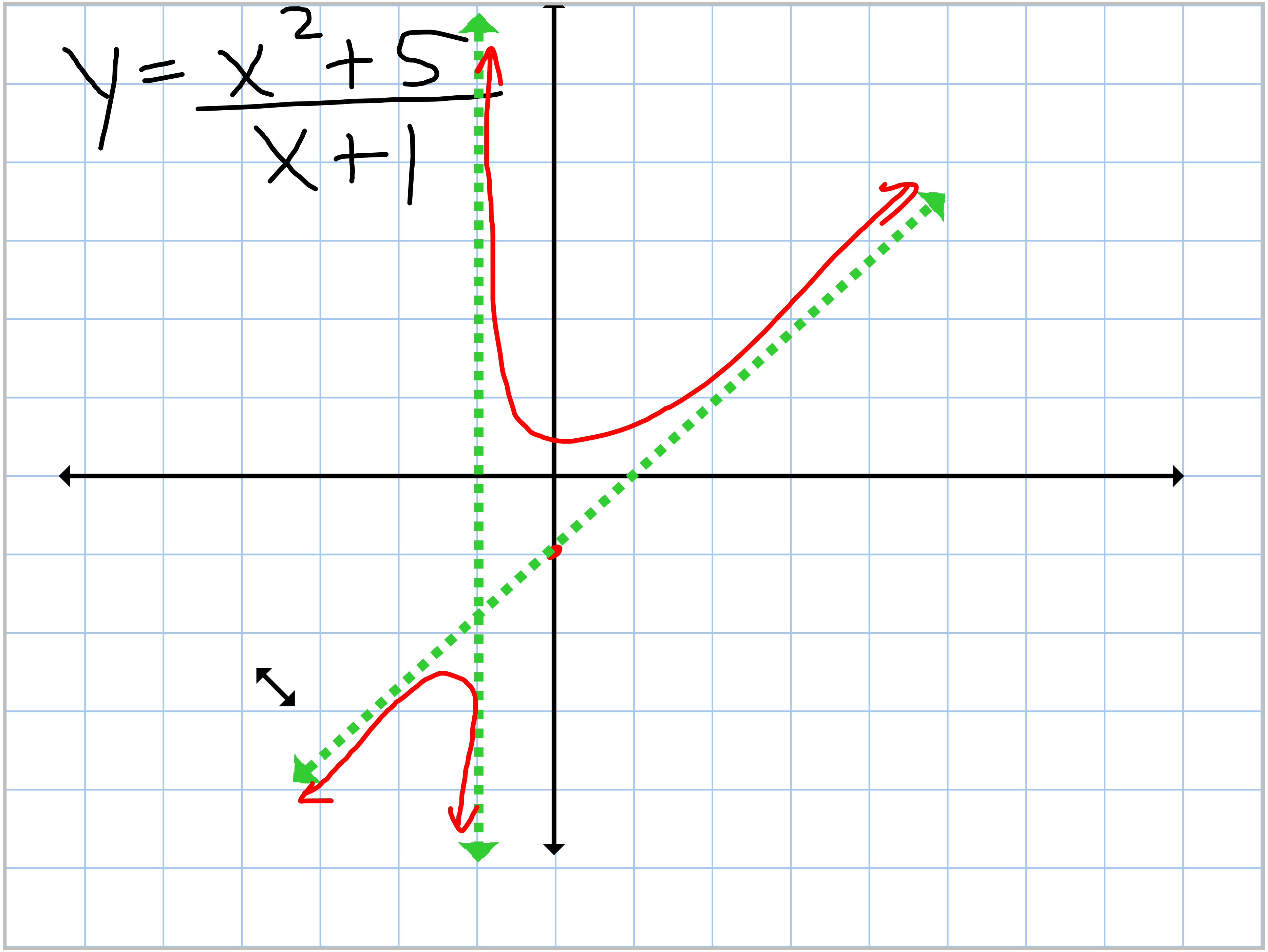
$$y = \frac{x^2 - 3x - 4}{x - 2}$$

V.A. $\rightarrow$ $x = 2$

H.A. $\rightarrow$ none

zeros $\rightarrow$ 4 and -1

O.A. $\rightarrow$ $y = x - 1$


$y = \frac{x^2+5}{x+1}$

$$\begin{array}{r|rrr} & 1 & 0 & 5 \\ -1 & & -1 & 1 \\ \hline & 1 & -1 & 6 \end{array}$$

$$\boxed{y = x - 1} + \frac{6}{x+1}$$

$$y = \frac{x^2+5}{x+1}$$

V.A. $\Rightarrow$ $x = -1$

H.A. $\Rightarrow$ none

zeros $\Rightarrow$ none

O.A. $\Rightarrow$ $y = \cancel{x+4}\ x-1$

$$y = \frac{x^2-3x-4}{x-2}$$

$$\begin{array}{r} x - 1 - \frac{6}{x-2} \\ x-2 \overline{\big) \, x^2 - 3x - 4} \\ -x^2 + 2x \\ \hline -x - 4 \\ +x - 2 \\ \hline -6 \end{array}$$

$-6 \leftarrow$ Remainder

$$y = \boxed{x-1} - \frac{6}{x-2}$$

$$y = \frac{x^2-3x-4}{x-2}$$

$$\begin{array}{r|rrr} & 1 & -3 & -4 \\ 2 & & 2 & -2 \\ \hline & 1 & -1 & -6 \end{array}$$

x term constant

remainder

$$y = x - 1 - \frac{6}{x-2}$$

$$\begin{array}{r} 15\frac{1}{2} \\ 2\overline{)\,31} \\ \underline{30} \\ 1 \end{array}$$

$$y = \frac{x^2+2x-5}{x-1}$$

V.A. $\Rightarrow$ $x = 1$

HA. $\Rightarrow$ none

zeros $\Rightarrow$ 1.45 or -3.45

O.A. $\Rightarrow$

$$x^2+2x-5=0$$

$$x = \frac{-2 \pm \sqrt{4-4\cdot1\cdot(-5)}}{2}$$

$$x = \frac{-2 \pm \sqrt{24}}{2}$$

$$\begin{array}{r|rrr} 1 & 1 & 2 & -5 \\ & & 1 & 3 \\ \hline & 1 & 3 & -2 \end{array}$$

$$y = x+3-\frac{2}{x-1}$$